THIRD ANNUAL REPORT OF THE

YUKON RIVER BASIN COMMITTEE

April 1, 1983 to March 31, 1984

YUKON RIVER BASIN STUDY

Yukon

Canada

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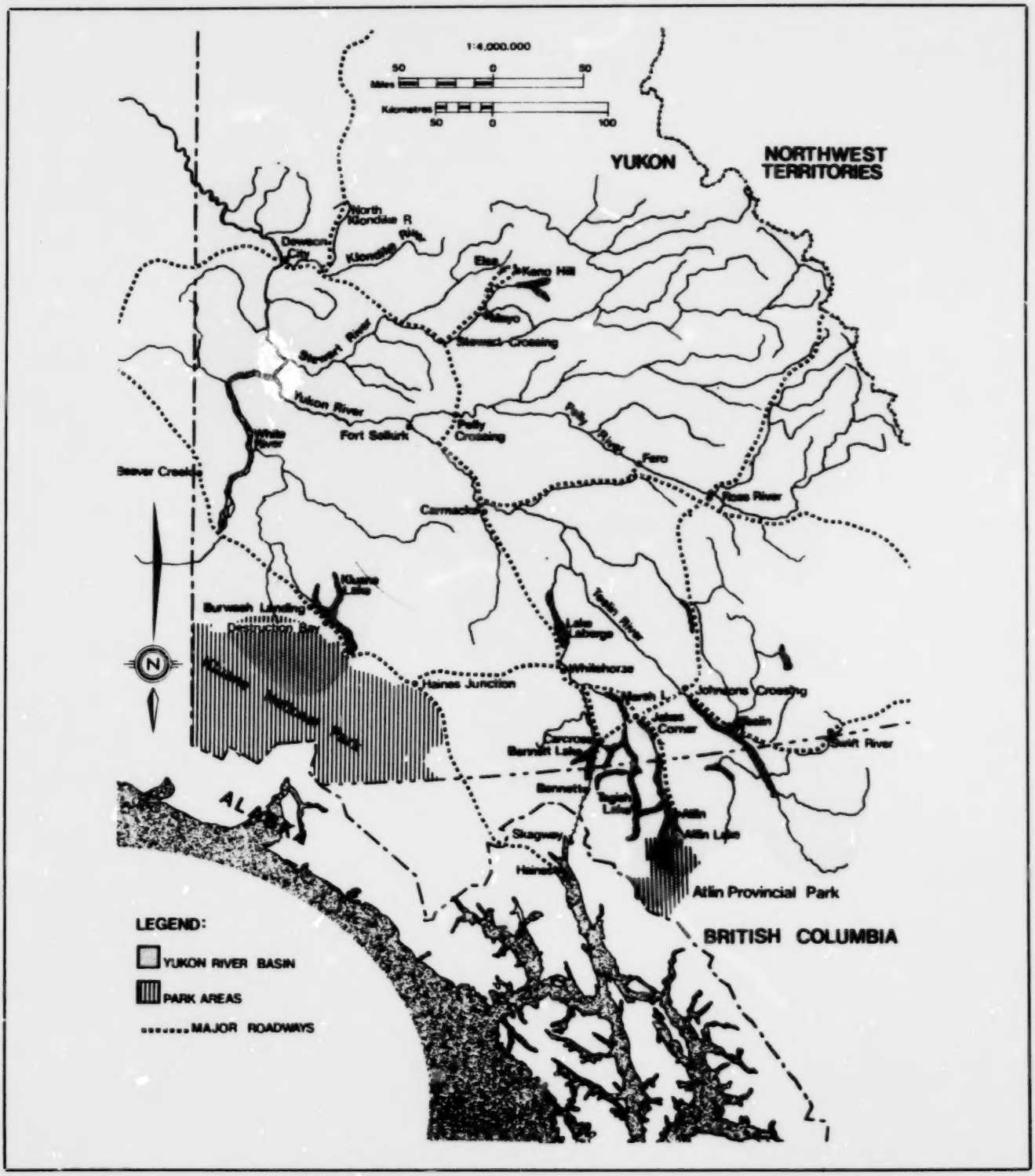

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Cover: Material for a duck bait trap is moved through a marsh on the Nisutlin flood plain.

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INTRODUCTION

Dog mushing is a popular sport and recreation activity in the Basin during winter months.

Canada, British Columbia and Yukon agreed on November 24, 1980 to jointly undertake studies leading to the formulation of a planning framework under which potential development alternatives could be evaluated. These studies will facilitate the development of guidelines for water and related resource management in the Basin. The funding for the Study was not to exceed 2.2 million dollars.

This is the third annual report of the Yukon River Basin Committee. The Committee is composed of four members representing the governments of Canada, British Columbia and Yukon. It is responsible for the administration and conduct of the Study.

The Committee formed Work Groups to prepare plans, monitor progress and write a report for each of the programs. The Chairman of the Work Groups make up the Technical Advisory Group which supports the Committee and the Study Director. During the study year the Committee, as part of the information exchange process, formed an Independent Review Group to provide for public consultation and for review of the Committee's report.

Study participants are listed on pages 14 and 15 of this report.

During this year the Committee initiated new studies including a project to integrate existing and new wildlife information, an evaluation of grayling stream habitat information, a creel census of three Yukon lakes and of Atlin Lake, an analysis of socio-economic data, an analysis of the water resource institutions, a study of chronic exposure of grayling to sedi-

ments and a description of the recreation capability of rivers and lakes.

The Committee met five times during the year. A two day workshop involving the Committee, Technical Advisory Group and many project workers was held in Whitehorse April 27 - 28, 1983 to exchange information and discuss the integration of results of individual studies. The Committee met with the Independent Review Group in Whitehorse to prepare mutually agreeable objectives.

During this year 21 projects were completed and 10 reports released. Eighteen other projects are nearly complete. The Study programs, projects, budget and expenditures are summarized on page 13. Expenditures for the year were $996,611.54.

The Study completion date was extended by the participating governments from December 1983 to September 30, 1984 to provide time for the integration of the project information and for the preparation of the Committee's recommendations.

These shrouded hills around Dawson City are part of the Yukon River Basin - the fifth largest basin in North America.

PROGRAM ACTIVITIES

PHYSICAL SCIENCES

Tim Osler collects water samples at the Yukon River, Marsh Lake dam as part of the water quality network project.

HYDROLOGY

This program was designed to improve knowledge of the hydrology of the Basin. An assessment of the hydrometric, meteorological and snowpack date collection networks was completed. Freeze-up was observed in the fall of 1983, completing the field work for a two year study of the ice regime.

The YUKON RIVER BASIN FLOOD RISK STUDY, describing flooding and flood prone areas, was released. A computer model of daily flows in the Basin and a summary report were completed.

A program report is being prepared by the Work Group.

WATER QUALITY

Water quality in the Basin was assessed by two projects completed during 1983/84.

Between September 1982 and September 1983, 21 stations on the Basin's major streams were monitored. A one year baseline of water quality data is now available in the report WATER QUALITY - YUKON RIVER BASIN. Seasonal variation of a number of parameters was identified.

A study of winter dissolved oxygen on the Nordenskiold and Takhini rivers determined that dissolved oxygen concentrations were rapidly depressed during the formation of ice cover, became further depressed during the winter and recovered rapidly after melting of the snowcover on the ice. The Work Group completed preparation of a draft program report.

FISHERIES

Improved knowledge of the Basin's fisheries resources in order to evaluate the potential effects of development was the primary goal of the Fisheries Work Group.

The second year of a two year salmon study was completed with the radio tracking of chinook salmon to their spawning grounds and the estimation of the numbers of chum and chinook salmon entering the Basin.

A study of the short term effects of placer mining sediments on arctic grayling was released, EFFECTS ON ARCTIC GRAYLING (THYMALLUS ARCTICUS) OF SHORT-TERM EXPOSURE TO YUKON PLACER MINING SEDIMENTS: LABORATORY AND FIELD STUDIES, and a study of the effects of chronic (six weeks) exposure to placer mining sediments was completed.

A study of stream habitat in the Mayo mining district and the Atlin mining division and a description of grayling life history and habitat utilization were released. They are titled STREAM HABITAT INVENTORY AND EVALUATION FOR TWO STUDY AREAS WITHIN THE YUKON RIVER BASIN and LIFE HISTORY AND HABITAT UTILIZATION OF ARCTIC GRAYLING (THYMALLUS ARCTICUS) IN TWO CENTRAL YUKON DRAINAGES. Studies of the productivity of the Basin's lakes, a creel census of three Yukon lakes and a creel census of Atlin Lake were also completed. Preparation of the Work Group report was underway by year end.

The massive fish wheel scoops salmon to be spaghetti and radio tagged to locate spawning grounds.

Sculpins (adult shown above) are found in virtually all lakes and streams throughout the Basin.

WILDLIFE

This program was designed to provide data and information on the species most dependent upon aquatic and riparian habitat.

Fieldwork in the Nisutlin Delta to identify and describe components of the system critical for waterfowl fall staging was completed. Writing of the report on moose populations in the southern Basin was underway.

One report, with an appendix, describing the furbearer inventory, habitat assessment and trapper utilization of furbearers in the Yukon River Basin was released. It is FURBEARER INVENTORY, HABITAT ASSESSMENT AND TRAPPER UTILIZATION OF THE YUKON RIVER BASIN.

Reports identifying Canada Goose and other waterfowl habitat and utilization on the Stewart, Pelly and Big Salmon rivers were being prepared.

Canada Geese that stage at Nisutlin Bay are banded to determine wintering areas and migration routes.

Wolverine tracks cut across Bennett Lake near Carcross, Yukon.

The Work Group report was also in progress.

DEVELOPMENTAL ISSUES

PLACER MINING

A description of the placer mining industry was released in the previous year. The Placer Mining Work Group exchanged information on placer mining between British Columbia and Yukn.

Information on placer mining was also gathered through the fisheries and socio-economic programs.

A monitor is used for hydrolic mining on a placer claim at Jackson Hill, Dawson City, Yukon.

In the summer, recreation turns to the lakes and rivers with swimming, boating, fishing and beach front cottage lots.

TOURISM, PARKS AND RECREATION

The goal of this program was to identify the interrelationship between water resources and tourism, parks and recreation in the Basin and to identify potential impacts of development.

A report summarizing information on tourism, parks and recreation was prepared. Two studies were undertaken: one to provide a physical description of lakes and rivers and another to describe the recreational capability of the Basin.

The Work Group report is being written.

ENERGY

A coordinated overview of energy supply and demand in the Basin is provided by this program.

A report entitled ELECTRIC TRANSMISSION INTERCONNECTION STUDY was released describing the economic and engineering feasibility of alternative electric interconnections between Yukon and British Columbia, Alaska and Northwest Territories. A review of nine previous energy demand studies was completed and released as the REVIEW OF YUKON ENERGY DEMAND STUDIES.

Also released was a YUKON ENERGY INVENTORY AND UTILIZATION

REVIEW. It examined potential availability, suitability and cost of alternative energy resources for Yukon.

Hydroelectric sites in the Basin, investigated between 1960 and 1983, were reviewed and assessed for project importance and information adequacy. A Yukon energy bibliography listing documents on Basin energy resources and their locations is due for release early in the new fiscal year. At the same time a report inventorying Yukon hydroelectric sites will be released.

A study of the importance of water storage to the Yukon hydroelectric potential was completed. The study describes the value of adequate flow control for economic hydroelectric development.

The Work Group report is being prepared.

LINKAGES

SOCIO-ECONOMIC

Economic conditions in the Basin and regulatory regimes (institutional arrangements) were described by this program.

An input-output table for the Yukon economy was created to provide data on the interrelationship of the sectors of the economy. As well, a method of updating and extending the Territorial Accounts system of classifying and recording sectorial economic contributions was continued.

A model of the Yukon economy was developed which can be used to observe and evaluate influences of many factors on the economy. This model was used to prepare growth scenarios for the economy and the report is called THE YUKON ECONOMIC, COHORT-SURVIVAL AND ENERGY MODELS.

A report describing the Yukon economy and economic growth between 1983 and 2003 was also prepared.

A four part study of institutional arrangements in the Basin was completed. The study described the legislation and agencies involved in management of the water and related resources of the Basin. Secondly, it discusses the integration of water management into land planning in the Yukon. The third part assesses the institutional arrangements for planning, constructing and operating hydroelectric power facilities while legal and administrative arrangements for placer mining are assessed in the fourth section.

The socio-economic Work Group report was completed.

The Grade 10 Wildlife class collects in front of the display they created on the Yukon River Basin.

INFORMATION EXCHANGE

Emphasis was placed on promoting public awareness and feedback in this program designed to exchange information with the public and other government agencies.

During the year public education continued through press releases and feature articles and broadcasts. A public display was created by a high school science class and several service club presentations were made.

Dissemination of information by the release of Study reports was ongoing throughout the year and an Independent Review Group was formed to actively involve members of the public in the final phase of the Study. The Group will provide comments on the Study, review the Committee's report and provide a report on its results to the Committee.

FUTURE STUDY PLANS

During the remaining months of the Study the project and program reports and the report of the Independent Review Group will be completed and released.

The Yukon River Basin Committee's report on the Study will be completed for submission to the Ministers.

Members of the Independent Review Group meet to discuss the Yukon River Basin Study.

STATEMENT OF EXPENDITURES

1983/84

MARCH 31, 1984

Work Group	Agency		Project	Allocated	Actual Expenditures
				$	$
Energy	Yukon	Project 32	Energy Archival Task	2,492.15	2,492.15
	NCPC	Project 50	Hydroelectric Inventory	25,000.00	25,000.00
	NCPC	Project 53	Hydroelectric Planning	25,000.00	25,000.00
	Yukon	Project 54	Energy Alternatives	20,000.00	20,000.00
Fisheries	Yukon	Project 34	Stream Habitat Inventory	3,148.73	3,148.73
	DFO	Project 35	Salmon Inventory	140,598.10	140,598.10
	DFO	Project 49	Fisheries Lake Productivity Index	20,347.85	20,347.85
	Yukon	Project 60	Stream Habitat Evaluation	41,000.00	41,000.00
	DFO	Project 61	Creel Census 3 Yukon Lakes	10,000.00	10,000.00
	IWD	Project 62	Creel Census Atlin Lake	10,000.00	9,215.84
	DFO	Project 65	Chronic Effects/Grayling	50,000.00	49,967.34
	IWD	Project 69	Integrate Fisheries Data	5,000.00	4,387.50
Hydrology	IWD	Project 41	Winter Ice Cover & Break-Up	36,075.42	34,743.78
	IWD	Project 44	Daily Hydrologic Flow Model	6,378.91	6,378.91
	IWD	Project 45	Evaluation of Scenarios	4,000.00	4,000.00
	IWD	Project 55	Natural Flooding	25,000.00	25,000.00
	DIAND	Project 56	Hydrology Network Assessment	10,338.00	9,001.55
Socio-Economic	Yukon	Project 23	Economic Input/Output Tables	16,322.00	16,322.00
	Yukon	Project 24	Economic Accounts Update	23,399.00	20,000.00
	Yukon	Project 63	Socio-Economic Data Analysis	40,000.00	37,811.60
	IWD	Project 64	Institutional Analysis	35,000.00	33,899.00
Tourism Parks & Recreation	Yukon	Project 36	Tourism Parks & Recreation Program	37,302.08	37,302.08
	Yukon	Project 57	Recreational Capability - Lakes	25,000.00	23,839.78
	Yukon	Project 58	Recreational Capability - Rivers	25,000.00	25,000.00
	Yukon	Project 68	Descriptive Study	5,000.00	5,000.00
Water Quality	DIAND	Project 42	Water Quality Network	60,210.00	52,519.23
	IWD	Project 48	Dissolved Oxygen	21,635.86	16,719.69
Wildlife	Yukon	Project 25	Waterfowl - Nisutlin	10,055.82	10,000.00
	Yukon	Project 26	Moose Populations	263.61	263.61
	Yukon	Project 38	Furbearer Inventory	24,142.12	22,386.20
	CWS	Project 39	Waterfowl/Raptor	35,962.50	35,962.50
	CWS	Project 40	Waterfowl Spring Staging	26,068.19	26,068.19
	Yukon	Project 59	Integrate Wildlife Data	2,000.00	2,000.00
Information Exchange & Coordination	Yukon	Project 47	Information Exchange	48,065.24	45,762.98
Study Administration and Planning	IWD	Project 21	Program Administration	7,200.00	7,200.00
	All	Project 30	Work Group Travel	18,700.00	16,548.95
	Yukon	Project 37	Study Director's Office	135,746.22	129,099.70
	IWD	Project 46	Annual Reports and Final Report	2,624.28	2,624.28
	Yukon	Project 66	Drafting Services	3,000.00	.00
	Yukon	Project 67	Word Processing Services	3,000.00	.00
			TOTALS	**1,040,876.08**	**996,611.54**

ANNUAL WORK PROGRAM, PROJECTS, EXPENDITURES & BUDGET

Program	Government	Projects	Program Allocation	1981/2	1982/3	1983/4	Budget 1984/5
Energy	Yukon	Archival Task		-	7,508	2,492	-
	Canada	Hydroelectric Inventory		-	20,000	25,000	-
	B.C.	Potential Interconnections	120,000	-	5,000	-	-
	Yukon	Demand Study Review		-	5,000	-	-
	Canada	Hydroelectric Planning		-	-	25,000	-
	Yukon	Energy Alternatives		-	10,000	20,000	-
Fisheries	Canada	Inventory Existing Fish Data		19,764	4,064	-	-
	Canada	Salmon Inventory		-	119,402	140,598	-
		Fisheries Placer Mining Studies:					
	Canada	Sediment effects on grayling		-	50,000	49,967	-
	Yukon	Stream Habitat Inventory		-	81,597	3,149	-
	Yukon	Stream Habitat Evaluation	572,756	-	-	41,000	-
		Fisheries Socio-Economic Studies:					
	Canada	Lake Productivity Index		-	4,652	20,348	-
	Canada	Creel Census of Three Yukon Lakes		-	-	10,000	-
	Canada	Creel Census of Atlin Lake		-	-	9,216	-
	Canada	Integrate Fisheries Data		-	-	4,387	14,612
Hydrology	Canada	Network Assessment		-	-	9,002	-
	Canada	Daily Hydrologic Flow Model		-	7,621	6,379	-
	Canada	Evaluation of Scenarios	105,219	-	-	4,000	-
	Canada	Winter Ice Cover and Break-Up		-	17,142	34,743	1,332
	Canada	Natural Flooding		-	-	25,000	-
Placer	Canada	Description of Placer Mining	8,912	-	8,912	-	-
Socio-Economic	Yukon	Input/Output Tables		5,850	11,850	16,322	-
	Yukon	Economic Accounts		1,601	-	20,000	-
	Yukon	Simulation Model	167,598	-	40,264	-	-
	Yukon	Socio-Economic Data Analysis		-	-	37,812	-
	Canada	Socio-Economic Institutional Analysis		-	-	33,899	-
Tourism, Parks & Recreation	Yukon	Tourism Parks & Recreation program		-	8,698	37,302	
	Yukon	Recreational Capability of Lakes	99,840	-	-	23,840	-
	Yukon	Recreational Capability of Rivers		-	-	25,000	-
	Yukon	Descriptive Study		-	-	5,000	-
Water Quality	Canada	Water Quality Monitoring Network	167,108	-	61,705	52,519	-
	Canada	Dissolved Oxygen		-	33,664	16,720	2,500
Wildlife	Yukon	Waterfowl - Nisutlin Delta		14,888	10,056	10,000	-
	Yukon	Moose Inventory		30,000	69,736	264	-
	Yukon	Furbearer Track Sampling		11,033	-	-	-
	Yukon	Furbearer Inventory	349,889	-	63,825	22,386	-
	Canada	Waterfowl/Raptor Inventory		-	37,863	35,963	-
	Canada	Spring Staging		-	15,807	26,068	-
	Yukon	Integrate Wildlife Data		-	-	2,000	-
Information Exchange	Yukon	Newsletter	109,605	757	-	-	-
	Yukon	Information Exchange & Coordination		-	25,149	45,763	37,936
Study Administration and Planning	Yukon	Annual Reports and Final Report Study Director's Office, travel reimbursement	457,204	58,823	119,463	155,473	123,445
			2,158,131	-	-	-	-
		Contingency	41,869				
		Total	2,200,000	142,716	838,978	956,612	179,825

STUDY PARTICIPANTS

YUKON RIVER BASIN COMMITTEE

Representing
CANADA

E.M. CLARK, *Chairman*
Regional Director
Inland Waters Directorate
Pacific and Yukon Region
Environment Canada

M. MORISON, *Member*
Director General
Northern Affairs Program
Indian and Northern Affairs Canada

Representing
BRITISH COLUMBIA

J. O'RIORDAN, *Member*
Director
Assessment & Planning Branch
Planning & Resource Management Division
Ministry of Environment

Representing
YUKON

G. LIVINGSTON, *Member*
Deputy Minister
Department of Renewable Resources

ALTERNATES

M.M. WIGGINS
Inland Waters Directorate
Environment Canada

A.H. JONES
Northern Environment
Indian and Northern Affairs Canada

D. HUTTON
LAND CLAIMS SECRETARIAT
Executive Council Office

SECRETARY

S.A. D'AQUINO
Inland Waters Directorate
Environment Canada

OFFICE OF STUDY DIRECTOR

W.G. WHITLEY
Study Director

R.A. HODGE
Technical Consultant

R.A. SNARY
Information Officer

L.G. JAMIESON
Office Manager

J. BRIED
Information Program Secretary

TECHNICAL ADVISORY GROUP

WATER QUALITY
J. NICKEL
Northern Affairs Program
Indian and Northern Affairs Canada

PLACER
T. ROBERTS
Waste Management Branch
Ministry of Environment

FISHERIES
G.L. ENNIS
Habitat Management Division
Fisheries and Oceans Canada

SOCIO-ECONOMIC
S.A. D'AQUINO
Inland Waters Directorate
Environment Canada

ENERGY
B. BRICKMAN
Northern Affairs Program
Indian and Northern Affairs Canada

HYDROLOGY
R.O. LYONS
Inland Waters Directorate
Environment Canada

TOURISM PARKS & RECREATION
A. HODGSON
Land Planning Branch
Department of Renewable Resources

WILDLIFE
D. MOSSOP
Wildlife Management Branch
Department of Renewable Resources

YUKON RIVER BASIN STUDY
WORK GROUPS

WATER QUALITY

J. NICKEL, *Chairman,* Indian and Northern Affairs, Whitehorse
G. MacKENZIE-GRIEVE, Environment Canada, Whitehorse
C.B.J. GRAY, Environment Canada, Vancouver
P. WHITFIELD, Environment Canada, Vancouver
T. ROBERTS, Ministry of Environment, Smithers
M.E. JACK, Indian and Northern Affairs, Whitehorse
B. WILKES, Ministry of Environment, Smithers
Alternate to T. Roberts

HYDROLOGY

R.O. LYONS, *Chairman,* Environment Canada, Vancouver
W.L. KREUDER, Environment Canada, Vancouver
W. DREHER, Ministry of Environment, Smithers
R. JANOWICZ, Indian and Northern Affairs, Whitehorse

WILDLIFE

D. MOSSOP, *Chairman,* Department of Renewable Resources, Whitehorse
M. DENNINGTON, Environment Canada, Whitehorse
D. REYNOLDS, Ministry of Environment, Smithers
B. VAN DRIMMELEN, Ministry of Environment, Smithers
(Appointed September 28, 1983)

TOURISM PARKS & RECREATION

A. HODGSON, *Chairman,* Department of Renewable Resources, Whitehorse
W.J. MASYK, Environment Canada, Haines Junction
M. CROMBIE, Indian and Northern Affairs, Whitehorse
B. DALZIEL, Ministry of Environment, Smithers
J. SPICER, Tourism, Heritage & Cultural Resources, Whitehorse

FISHERIES

G.L. ENNIS, *Chairman,* Fisheries and Oceans, Vancouver
D. DAVIES, Department of Renewable Resources, Whitehorse
D. REYNOLDS, Ministry of Environment, Smithers
R.A.C. JOHNSTON, Fisheries and Oceans, Whitehorse
T. PENDRAY, Department of Renewable Resouces, Whitehorse *(Appointed September 28, 1983)*
M. WHATELY, Ministry of Environment, Smithers
(Appointed September 28, 1983)

ENERGY

B. BRICKMAN, *Chairman,* Indian and Northern Affairs, Whitehorse
R.J. WHITE, Environment Canada, Vancouver
P. KENT, Municipal and Community Affairs, Whitehorse
P.A. KADAK, B.C. Hydro Engineering Group, Vancouver
W. DREHER, Ministry of Environment, Smithers
H. KALDOR, Northern Canada Power Commission, Whitehorse
G.K. BAUER, Yukon Electrical Co. Ltd., Whitehorse
M. ORECKLIN, Energy, Mines and Resources, Whitehorse
D. DUGUID, Consultant, Chemainus
P. FRASER, Economic Development & Intergovernmental Relations, Whitehorse
(Alternate to P. Kent)

SOCIO-ECONOMIC

S.A. D'AQUINO, *Chairman,* Environment Canada, Vancouver
C. HEARTWELL, Economic Development & Intergovernmental Relations, Whitehorse
B. BRICKMAN, Indian and Northern Affairs, Whitehorse

PLACER

T. ROBERTS, *Chairman,* Ministry of Enviroment, Smithers
G. GILBERT, Indian and Northern Affairs, Whitehorse
J. PAYNE, Fisheries and Oceans, Vancouver
J. KUHN, Department of Renewable Resources, Whitehorse
J.H.C. WALKER, Ministry of Environment, Victoria

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Department of Northern Affairs
Patrick Morrow
Dave Mossop
Rhondda Snary
Department of Fisheries and Oceans

Graphics and Design

Tundra Graphics